

**BEFORE THE LEWIS COUNTY
BOARD OF COUNTY COMMISSIONERS**

IN RE:

APPROVAL OF AN INTERLOCAL AGREEMENT)
BETWEEN LEWIS COUNTY, ACTING AS THE LEAD)
AGENCY FOR THE CHEHALIS RIVER BASIN)
FLOOD AUTHORITY AND PUBLIC UTILITY)
DISTRICT NO.1 FOR FUNDING OF A PHASE II)
STUDY OF WATER RETENTION FACILITIES FOR)
FLOOD CONTROL)

Resolution No. 09- 129

WHEREAS, the PUBLIC UTILITY DISTRICT NO. 1 OF LEWIS COUNTY (PUD) and LEWIS COUNTY, acting as lead agency for the Chehalis River Basin Flood Authority (Flood Authority), are both political subdivisions of the State of Washington, and desire to enter into an Agreement pursuant to the Interlocal Cooperation Act, RCW Chapter 39.34,

WHEREAS, the Flood Authority, on April 16, 2009, approved funding for a Phase II study by the PUD of potential water retention facilities and authorized Lewis County to enter into an agreement for funding by the Flood Authority; and

WHEREAS, water retention facilities may mitigate the adverse impacts associated with flooding and provide secondary benefits, including generation of renewable energy and water quality improvements, but such data are not available; and

WHEREAS, an Interlocal Agreement has been negotiated between Lewis County, acting as the lead agency for the Flood Authority, and the PUD (attached); and

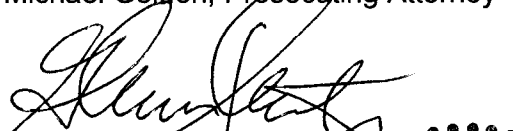
WHEREAS, the Board of County Commissioners has reviewed the Interlocal Agreement and has determined that is appropriate to enter into an agreement for funding of the Phase II study; and

WHEREAS, it appears to be in the best public interest to approve this Interlocal Agreement for funding of studies as may be necessary in assessing and prioritizing potential flood mitigation projects, NOW THEREFORE

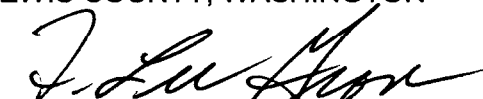
BE IT RESOLVED that: the Board of County Commissioners of Lewis County hereby approves of the terms and conditions of the attached Interlocal Agreement, and hereby authorizes the Chairman of the Board to execute the agreement on behalf of the County, to become effective immediately.

DONE IN OPEN SESSION this 4th day of May, 2009.

APPROVED AS TO FORM:
Michael Golden, Prosecuting Attorney



BOARD OF COUNTY COMMISSIONERS
LEWIS COUNTY, WASHINGTON


Chairman

INTERLOCAL AGREEMENT

THIS AGREEMENT is made the 4th day of May, 2009, between PUBLIC UTILITY DISTRICT NO. 1 of LEWIS COUNTY, a public utility district (hereinafter "District"), and LEWIS COUNTY, as lead agency for the Chehalis River Basin Flood Authority (hereinafter "County").

WHEREAS, the December 3, 2007 flooding event in the Chehalis River Basin devastated the lands and citizens of the Chehalis River Basin ("Basin") in Grays Harbor, Lewis, and Thurston counties;

WHEREAS, Lewis, Grays Harbor and Thurston counties, the Confederated Tribes of the Chehalis, the cities of Aberdeen, Centralia, Chehalis, Montesano, Oakville, and the towns of Bucoda and Pe Ell, have associated as the Chehalis River Basin Flood Authority (hereinafter "Flood Authority");

WHEREAS, the Flood Authority is currently investigating potential Basin-wide flooding solutions;

WHEREAS, in 2008, the District hired EES Consulting to determine if water retention structures in key places on the Chehalis River could help make a difference to those families and businesses in the Basin that routinely face the threat of flooding, as well as provide environmental benefits and, as a secondary benefit, hydropower opportunities;

WHEREAS, at the District's expense, EES Consulting conducted a "Phase I" study, finding that two water retention projects (hereinafter "Projects"), one on the South Fork of the Chehalis River near Wildwood in the Boistfort Valley and the other on the main stem of the Chehalis River south of Pe Ell, could help protect Basin families and businesses from flooding, as well as potentially offer certain environmental benefits and limited hydropower opportunities;

WHEREAS, the District concluded that a "Phase II" study is necessary in determining the feasibility of the Projects:

WHEREAS, the District has submitted a request to the Flood Authority to pay for the "Phase II" study to be performed by EES Consulting;

WHEREAS, the Authority met on March 19, 2009, and considered the District's proposal;

WHEREAS, the Authority authorized the "Phase II" scope of work and budget estimates as set forth in Exhibit A, attached hereto and made a part hereof by reference, provided that initial funding be limited to \$250,000.00 and the work performed be limited to such portions of the preliminary engineering and site

evaluation and the fisheries and habitat evaluation as can be completed within the \$250,000.00 budget;

WHEREAS the Authority directed Lewis County, as lead agency, to enter into an interlocal agreement with the District for performance of the "Phase II" study by EES Consulting, subject to the scope and budget limitations set forth above;

WHEREAS, Authority Resolution No. 2009-1 requires the parties to enter into an interlocal agreement implementing the Flood Authority's decision and specifying the conditions under which the Phase II study will be undertaken, administered and paid for;

NOW, THEREFORE, in consideration of the terms and conditions set forth herein, Lewis County and the Lewis County Public Utility District agree as follows:

1. **Purpose.** This Interlocal Agreement ("Agreement") implements the Chehalis River Basin Flood Authority Resolution No. 2009-1, dated March 19, 2009, directing the District to conduct the "Phase II" tasks in accordance with the terms and budget set forth in Exhibit B, attached hereto and made a part hereof by reference, using no more than \$250,000 in funds appropriated by the Legislature for the Flood Authority and maintained by the State of Washington Office of Financial Management on behalf of the Authority, to be paid in monthly progress payments consistent with Exhibit B.
2. **Means of Undertaking.** No separate entity will be created to implement the terms of this Agreement. By Resolution 2009-1, the Authority appointed a subcommittee of Lewis County Commissioner William Schulte, Grays Harbor County Commissioner Terry Willis, and Mark White, Natural Resources Director of the Confederated Tribes of the Chehalis Reservation, to develop and recommend this Agreement, to receive briefings from the District concerning the status and progress of the Phase II Study, and to review the results of the Phase II Study on an ongoing basis as they are rendered by the District. This subcommittee also will jointly administer this Agreement on behalf of the Authority.
3. **Definitions.** For purposes of this Agreement, the terms set forth below shall have the following meanings:
 - a. "Authority" means the Chehalis River Basin Flood Authority.
 - b. "Information" means all writings, programs, research data, maps, graphs, reports, records, recordings, statements, declarations, summaries, software, photographs, digital images, statistics, tables, compilations, models, and other information provided by each party or its consultants to the other party or its consultants pursuant to this Agreement.
 - c. "Lead Agency" means Lewis County.

- d. "District" means Lewis County Public Utility District.
 - e. "Fatal flaw" means any finding in the course of the Phase II Study that, due to the geology of the proposed sites or some other factual finding, water retention projects cannot be built in the proposed locations.
 - f. "Sub-committee" means the subcommittee of the Chehalis River Basin Flood Authority created by Resolution No. 2009-1- of the Authority and consisting of: (1) Commissioner William Schulte of Lewis County; (2) Commissioner Terry Willis of Grays Harbor County; and (3) Mark White, Natural Resources Director of the Confederated Tribes of the Chehalis Reservation.
4. **Ownership of Items Produced.** The Information developed in performing the Scope of Work described in Exhibits A and B shall be delivered to and owned by the Authority to the extent the development of the information and data is paid for by the Authority. All such information shall be fully accessible to and may be used by any member of the public for any purpose.
5. **Notice.** Except as set forth elsewhere in the Agreement, and for all purposes except service of process, notices required under this Agreement shall be given by the District to the three members of the Sub-committee, Lewis County Commissioner Bill Schulte, Grays Harbor Commissioner Terry Willis and Mark White, at the following addresses: (a) Commissioner Bill Schulte, 351 NW North St, Chehalis, WA 98532, (b) Commissioner Terry Willis 100 W Broadway, Suite 1, Montesano, WA 98563, (c) Mark White, PO Box 536 Oakville, WA 98568. Notice to the District for all purposes under this Agreement shall be given to the District at the follow address: David Muller, PO Box 330, Chehalis, WA 98532. Notice may be given by depositing it the US Mail, first class, postage prepaid. Notice shall be deemed effective two business days after mailing.
6. **Term.** This Agreement shall commence upon execution by the District and Lead Agency and approval by the Flood Authority. This Agreement shall terminate upon any of the following events: (1) the determination by the Authority that work done in the course of the Phase II Study has uncovered a "fatal flaw" in the proposed water retention projects; or (2) either party's written notice terminating the Agreement. The termination shall be effective fourteen (14) days following notification of termination delivered to the other party and, in the case of termination by the Lead Agency, no new work will be undertaken after receipt of notification. District shall be entitled to receive compensation for work performed and costs reasonably incurred through the effective date of termination.
7. **Amendments.** Either party may request changes in this Agreement. Any and all agreed amendments shall be approved by the Authority and the District, shall be in writing and signed by the parties, and shall be effective on the latter date of execution by the respective parties.

8. **Waiver.** Waiver of any breach or condition of this Agreement shall not be deemed a waiver of any prior or subsequent breach. No term or condition of this Agreement shall be held to be waived, modified or deleted except by an instrument, in writing, signed by the parties.
9. **Severability.** If any term or condition of this Agreement or the application thereof to any person(s) or circumstances is held to be invalid, then such invalidity shall not affect the other terms, conditions, or applications which can be given effect without the invalid term, condition, or application. To this end, the terms and conditions of this Agreement are declared to be severable.
10. **Survival.** The provisions of paragraph 4 of this Agreement shall survive, notwithstanding the termination or invalidity of this Agreement for any reason.
11. **Venue and Choice of Law.** In the event that any dispute should arise concerning the interpretation of any of the terms of this Agreement, the venue of any litigation shall be in the courts of the State of Washington for the County of Lewis. This Agreement shall be governed by the law of the State of Washington. Each party shall be responsible for its own attorney fees.
12. **Entire Agreement.** This written Agreement represents the entire agreement of the parties and supersedes any prior oral statements, discussions, or understandings between the parties.

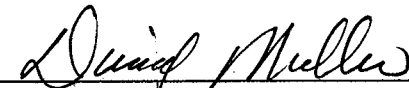
IN WITNESS WHEREOF, the parties have executed this Agreement this 4 day of May, 2009.

LEWIS COUNTY:

(as lead agency for Flood Authority):

By: 
Its: Chairman F. Lee Grose

**PUBLIC UTILITY DISTRICT NO. 1
of LEWIS COUNTY:**

By: 
Its: Manager

Scope of Work and Budget Estimates for Phase II Benefit Cost Study of Water Retention Facilities in the Chehalis River Basin

A. INTRODUCTION

A Phase I benefit cost study on the feasibility of controlling water retention facilities (the Projects) within the Chehalis River Basin has been completed by EES Consulting (EES). This Phase I study concluded that the benefits of installing two water retention facilities had a direct benefit to cost ratio of approximately 2 to 1, and an indirect plus direct benefit to cost ratio of 3.6 to 1.

Based upon the initial attractiveness of these Projects, EES has been asked to develop a Phase II benefit to cost study which will refine and enhance the assumptions and calculations contained in the Phase I study. The Phase I benefit to cost study identified four areas where more analysis and study were needed to more accurately evaluate the feasibility of the Project's. These four areas fall into the categories of preliminary engineering and site evaluation, regulatory and permitting, fisheries and habitat evaluation, and economic analysis. A summary scope of work and budget for each of these four areas follows below:

B. SCOPE OF WORK

Preliminary Engineering and Site Evaluation

Introduction

The proposed scope of work for the preliminary engineering and site evaluation will involve the refinement of the initial design of the two water retention facilities contemplated in the Phase I study for the Upper Chehalis and South Fork Chehalis sites. This scope will support advancing the Projects through the feasibility stage. Information developed will be useful for advancing environmental studies, permitting activities and further refining the benefit cost of the Projects.

Task Descriptions

- ***Task 1—Review Data and Perform Site Reconnaissance***

Under this task, EES will review available published data, reports, surveys and mapping, and other pertinent background information to get a better understanding of the Projects. A site visit will be made to confirm the locations of the Projects. This task will establish some preliminary design criteria for the Projects which will be compiled into a document for use by all other Project team members.

- *Task 2—Preliminary Project Geological Investigations*

This task will perform feasibility level geotechnical assessment of the two Project sites, including soils and foundation characteristics. During the site reconnaissance, the location of the dam axis will be determined.

- *Task 3—Refinement of Desired Storage Volume*

This task will refine the storage requirements based on prior studies and operational modeling for the Project both with and without a hydropower component. This work would be needed to perform Task 4.

- *Task 4—Prepare Conceptual Drawings*

The LiDAR topography (already available) will be used to set the locations the dams and spillways. The crest elevations will be set based on the Project site topography, required storage volume and estimated spillway capacity. A plan, profile and cross section of each Project will be developed and used as the basis for future geotechnical investigations, engineering and other technical studies. Site plans showing upstream inundation areas at full reservoir level will also be developed. Conceptual arrangements for hydropower additions will also be developed.

- *Task 5—Reservoir Storage*

Relationships of water elevations (stage), storage, and surface areas will be refined using LiDAR topography and the conceptual design drawings. Areas inside map contours will be measured using computer aided drafting software. The areas will be used to calculate volumes at various water levels. Using Excel, the calculated data will be plotted to develop curves of stage versus storage and stage versus surface area.

- *Task 6—Project Operations*

Based on the above tasks, a memo will be prepared describing the expected operation of the Projects for water retention as well as the optional hydropower production facility. This information will be useful in understanding potential impacts on downstream aquatic resources.

- *Task 7—Construction Cost and Schedule*

Based on the information developed in Task 3, an updated construction cost and schedule will be developed. This information will assist in better understanding Project costs and in refining benefit/cost ratio analyses.

Proposed Budget and Schedule

Table 1 presents the proposed tasks and their associated budgets.

| Table 1 Proposed Tasks and Budget | | |
|--------------------------------------|---|------------------|
| Task # | Description | Budget |
| 1 | Review Data and Perform Site Reconnaissance | \$ 19,000 |
| 2 | Preliminary Project Geological Investigations | 145,000 |
| 3 | Refinement of Desired Storage Volume | 14,000 |
| 4 | Prepare Conceptual Drawings | 33,000 |
| 5 | Reservoir Storage | 8,000 |
| 6 | Project Operations | 11,000 |
| 7 | Construction Cost and Schedule | 16,000 |
| | TOTAL | \$246,000 |

It is anticipated that the above tasks can be completed with nine months following the notice to proceed. Geological investigations will require landowner approvals for geophysical and geotechnical activities at the two sites.

Regulatory and Permitting

Introduction

The following tasks will be required to assess preliminary permitting for the Projects contemplated on the Upper Chehalis and South Fork Chehalis sites.

Task Descriptions

- ***Task 1—Review Existing Information and Site Visit***

A review of existing data, reports and other pertinent background information will be undertaken to get an understanding of the Projects. The permitting experts would also expect to obtain preliminary design criteria and confer with the design engineers to understand the proposed design concepts as they are being developed.

- ***Task 2—Review Permitting Needs***

For each Project site, regulatory experts will review all potentially applicable federal, state and local legal, and regulatory permitting and requirements.

- ***Task 3—Determine Level of Environmental Review and Identify Needed Studies***

For the total Project, regulatory experts will assess the level of environmental review that will be required (federal NEPA, state SEPA, and other). Working with fishery

experts, a list will be compiled of all required or needed environmental studies for each Project location.

- *Task 4—Assist in Determining Land Ownership*

Research of all county records and maps will be undertaken to delineate and determine land ownership for the areas that may be encompassed in the Project.

- *Task 5—Summary Report of Permitting Needs*

A report will be prepared describing the tasks completed and summarizing the information gathered and our conclusions regarding the permitting feasibility and needs and required environmental studies for each of the storage projects.

Proposed Budget and Schedule

Table 2 presents the proposed tasks and their associate budgets.

| Table 2 Proposed Tasks and Budget | | |
|--|-------------------------------------|-----------------|
| Task # | Description | Budget |
| 1 | Existing Information and Site Visit | \$ 6,480 |
| 2 | Review Permitting Needs | 5,400 |
| 3 | Level of Environmental Review | 3,240 |
| 4 | Land Ownership Determination | 2,700 |
| 5 | Summary Report | 2,700 |
| | TOTAL | \$20,520 |

It is anticipated that the above tasks can be completed with six months following the notice to proceed.

Fisheries and Habitat Evaluation

Introduction

In order to put together an assessment of the fisheries and habitat impacts of the Project, a review of existing information available on the Chehalis River system was undertaken. This included the limiting factors analysis (Smith and Wegner 2001) for the Chehalis River system, watershed planning documents for water resource inventory areas (WRIA) 22 and 23, background documents, information from the Chehalis Basin fisheries task force (CBFTF), and consultation with Dr. Hal Beecher of the Washington Department of Fish and Wildlife (WDFW). Information provided below, as well as a summary of proposed studies, and their justifications, are derived from these sources.

Task Descriptions

After review of the existing information and consultation with WDFW, areas of emphasis for the Phase II benefit cost analysis include:

- Instream Flows
- Fish Habitat
- Water Temperature
- Water Quality
- Channel Maintenance
- Connectivity
- Ramping Rates
- Protection of Salmon and Steelhead Incubating Eggs

Each of these areas will be evaluated via the tasks noted below.

- *Task 1—Review Existing Fisheries and Water Quality Information Related to the Chehalis River and South Fork Chehalis Mainstems*

Data sources that will be reviewed and summarized include the specific areas of:

- ✓ Instream flow analyses
- ✓ Hydrology
- ✓ Erosion
- ✓ Fish Species Composition, Abundance and Periodicity
- ✓ Barrier identification within and below the affected area
- ✓ Water Quality Issues
 - Temperature
 - Erosion
 - Sediment Deposition
 - Fecal Coliform
- *Task 2—Consultation*

Early and frequent consultation with the natural resource agencies, tribes, and NGOs are essential. A kickoff meeting will be held with the agencies to introduce them to the proposed Projects. The Fisheries and Aquatic Work Group (work group) would consist of, but not be limited to:

 - ✓ US Fish and Wildlife Service (USFWS)
 - ✓ National Marine Fisheries Service (NMFS)
 - ✓ USDA Forest Service (if applicable) (USFS)
 - ✓ Washington Department of Fish and Wildlife (WDFW)
 - ✓ Washington Department of Ecology (WDOE)
 - ✓ Chehalis Tribe

- ✓ Quinault Indian Nation
- ✓ Chehalis Basin Fisheries Task Force
- ✓ Timber companies
- ✓ Others

- *Task 3—Submit Study Plans to Fisheries and Aquatic Work Group*

Under this task, the extent of fisheries and water quality studies for the permitting of the proposed Projects would be determined with the work group. Studies that would most likely to be required by work group could include:

- ✓ Instream Flow Analysis
 - Fish Habitat Analysis
 - Channel Maintenance Flows
- ✓ Hydrologic Analysis
 - Historical Data Review
 - Potential Additional Data Collection (Stream Gauges)
- ✓ Water Temperature, Water Quality, and Sedimentation
 - Temperature Modeling in Areas with High Summer Water Temperatures
 - Turbidity
 - Erosion
 - Sediment Deposition
 - Fecal Coliform
- ✓ Fish Barrier Identification
 - Local All Potential Barriers
 - Inundation Analysis in Potential Reservoir Areas
- ✓ Connectivity of Habitats
- ✓ Channel Maintenance Flows
- ✓ Fish Species Composition and Abundance
- ✓ Ramping Rates
- ✓ Salmon and Steelhead Incubation Analysis

This task will provide a punchlist of the needed studies.

- *Task 4—Reports and Synthesis*

A summary report will be prepared of the studies needed to support all needed licenses and permits.

Proposed Budget and Schedule

It is estimated that the necessary background research and meetings with the relevant agencies can be undertaken in 8-10 months with a summary report on the regulatory and permitting requirements within an 8-10 month period.

Regarding budget for a Phase II level fisheries and regulatory analysis, Take 3 provides an estimate.

| Table 3 Estimated Costs for Chehalis River Basin and Aquatic Investigations | | |
|--|-----------------------------|------------------------|
| Task | Description | Estimated Costs |
| 1 | Review Existing Information | \$ 20,000 |
| 2 | Consultation | 30,000 |
| 3 | Submit Study Plans | 50,000 |
| | TOTAL | \$100,000 |

It should be noted that this proposed scope of work only identifies the needed studies but does not perform the needed studies. If all of the technical studies noted above are to be undertaken, the cost of these studies will range from \$500,000 to \$1,100,000, depending on the outcome of the negotiation with the various shareholders.

Economic Analysis

Introduction

Within the Phase I benefit cost study, several areas in need of additional refinement were identified. This section of the Phase II scope of work will address the noted areas in need of refinement.

Task Descriptions

- ***Task 1—Refine Estimates of Damages from Flooding***

Within this task, many of the more generic estimates of the damages caused by flooding will be refined. Economic losses in the areas of real estate values, agriculture and transportation will be updated via a more global search of the relevant literature.

- ***Task 2—Update the Value of Increased Number of Fish and Quality/Quantity of Habitat***

In the Phase I study, only very rough estimates of the value of enhanced fish production were attempted. In Phase II, a much more refined analysis will be undertaken from alternative sources to narrow the value associated with increased fisheries resources and improved habitat throughout the Chehalis River Basin.

- *Task 3—Update Benefit Cost Analysis*

After the aforementioned improvements in the economic metrics have been made, new Project construction costs determined and permitting needs refined, a new benefit to cost analysis will be undertaken. An updated Phase II report will also be produced which includes the finding of the entire Phase II effort.

Proposed Budget and Schedule

This section of the Phase II study cannot be completed until all of the technical work noted above is completed; however, it is estimated that 8-10 months in total time will be needed to complete the entire Phase II study.

The budget for this segment of the Phase II benefit cost study is summarized in Table 4.

| Table 4 Cost Estimates for Economic Section of Updated Benefit Cost Study | | |
|--|---------------------------|------------------|
| Task | Description | Estimated Costs |
| 1 | Damages | \$30,000 |
| 2 | Value of Fish and Habitat | 20,000 |
| 3 | Update Analysis | 60,000 |
| | TOTAL | \$110,000 |

C. SUMMARY OF BUDGET AND SCHEDULE

To summarize, Table 5 below recaps the budget for the four major areas in need of refinement in the Phase II areas in need of refinement in the Phase II benefit to cost study.

| Table 5 Budget Recap for Phase II Benefit to Cost Study | |
|--|------------------|
| Task | Estimated Budget |
| Preliminary Engineering and Site Evaluation | \$250,000 |
| Regulatory and Permitting | 20,000 |
| Fisheries and Habitat Evaluation | 100,000 |
| Economic Analysis | 110,000 |
| GRAND TOTAL | \$480,000 |

Based upon the needs to get the Project ready for permitting, hard design and fisheries review, a Phase II benefit to cost study will be needed to confirm the Project's financial feasibility. It is estimated that this Phase II feasibility study will cost between \$400,000 - \$500,000 and takes 8 - 12 months to complete. The \$480,000 budget and 8 to 12 month time schedule are estimates with a confidence level of plus or minus 20%.

Scope of Work and Budget Estimates for Phase II Study of Water Retention Facilities in the Chehalis River Basin

A. INTRODUCTION

A preliminary Phase I benefit cost study on the feasibility of controlling water retention facilities (the Projects) within the Chehalis River Basin has been completed by EES Consulting (EESC). Based upon the initial potential of these Projects, the Chehalis River Basin Flood Authority approved an additional \$250,000 funding to further study the possibility of building two water retention facilities on the Chehalis River; these sites are located on the Chehalis River above Pe Ell and the South Fork of the Chehalis River. A scope of work and budget estimate for the next phase of this Project is provided below:

B. SCOPE OF WORK

Preliminary Geological Investigations

Introduction

Investigation of potential site geology is critical as a preliminary step. Based on the initial funding, we propose breaking the geological investigation into six tasks described in detail below. These tasks generally include a literature review, site visitations, seismic refraction surveys, and developing a report and recommendations. Although boring rock samples will eventually be necessary to fully understand the thickness of the soil, the alluvial cover over bedrock, and the stratigraphy of the sites, this preliminary investigation defers such sub-surface exploration to later phases due to the expense of such research.

EES is proposing to sub-contract with Shannon & Wilson (S&W) to accomplish these tasks. S&W provide for solutions to the most pressing geotechnical, geologic, and environmental issues on infrastructure projects throughout the Pacific Northwest region. S&W staff has expertise in support of hydroelectric facilities, powerhouses, locks, spillways, fish passage, and related infrastructure such as roadways, bridges, and utilities. S&W's experience on dam and levee projects includes work with the U.S. Army Corps of Engineers (COE) Seattle and Walla Walla Districts, as well as Seattle City Light, Puget Sound Energy, and many PUD Districts statewide. S&W staff will conduct the preliminary geotechnical assessment portion of a feasibility-level study of two dam sites on the upper reaches of the Chehalis River in six tasks. Preliminary geophysical studies consisting of seismic refraction surveys will be performed by Philip Duoos, a geophysicist with whom S&W has worked on many projects. The geological investigation will require landowner approval for geophysical and geotechnical activities at the two sites.

Task Descriptions

- Task 1 – Geologic research would be performed to identify, obtain and review existing geologic and geotechnical literature that may apply to the subject sites. This may include geologic maps, COE reconnaissance studies, watershed analyses (mass wasting) for the two drainage basins, and Weyerhaeuser Company soil surveys.
- Task 2 – Existing aerial photographs will be reviewed to assess the geologic and mass wasting characteristics of the two valleys, as well as adjacent valleys. This information may be available from the landowners.
- Task 3 – A field reconnaissance will be performed by two geologists to map outcrops (including known quarry sites), soil deposits, landslides, and engineering characteristics of exposed materials. The supervising geologist and geotechnical engineer will visit the site for familiarity and meet with the landowner's geologist to discuss geologic details of the sites. This task would also include the seismic refraction surveys for the two dam sites. S&W anticipate that two 60-hour weeks would be necessary for the mapping team to adequately cover the dam and reservoir sites and adjacent lands.
- Task 4 – A geologic report will be prepared, presenting the results of the literature search, aerial photograph review and the field reconnaissance. This report will include text and graphics to portray the sites to the extent of the preliminary information that is available.
- Task 5 – A geotechnical report will be prepared with engineering characteristics of the materials and the sites, along with recommendations for additional phases and explorations. This report will also include a preliminary assessment of the seismicity of the sites based on existing literature for the region.
- Task 6 — EESC will provide coordination and support services for the geological investigations. Approximately four meetings between EESC and S&W will be held during this process. This schedule also anticipates two meetings with the Flood Control Authority Sub-Committee to discuss the progress of the work and to review various work products.

Proposed Budget and Schedule

Table 1 presents the proposed tasks and their associated budgets.

| Table 1 Proposed Tasks and Budget | | |
|--------------------------------------|---------------------------------|------------------|
| Task # | Description | Budget |
| 1-5 | Geological Investigations (S&W) | \$ 136,000 |
| 6 | Coordination and Support (EESC) | 24,000 |
| | TOTAL | \$160,000 |

It is anticipated that the above tasks can be completed within six months following the notice to proceed.

Environmental and Hydrologic Investigations

Introduction

EESC is providing the following draft scope of work for the Environmental and Hydrologic Investigations. There are several tasks necessary to ensure appropriate and sufficient information will be gathered so that informed decisions on the flood retention facilities can be made. These tasks include project scoping and development of agreed-upon studies required to fill data gaps and provide answers to relevant questions.

EESC proposes a series of consultation meetings with the Chehalis Tribe, federal and state agencies, non-governmental organizations (NGOs), and other stakeholders to identify existing information sources, data gaps, and information needs. A more complete scope of work will be provided after consultation and scoping review with the interested parties. The final step in the scoping process will be submittal of study plans, which will identify those studies required and the methods proposed to evaluate critical issues.

Task Descriptions

Preliminary tasks for Environmental and Hydrologic Investigations under Phase 2, Scoping, are provided below.

- Task 1 – Consultation: EESC proposes to begin consulting with the above named entities as soon as possible to identify existing sources of information, data gaps, concerns and questions that need to be addressed. Consultation will be ongoing, but will consist, at a minimum of the following meetings:
 - ✓ Kickoff meeting to introduce the project
 - ✓ Review of existing information
 - ✓ Identification of concerns and data gaps
 - ✓ Review of proposed studies
 - ✓ Submittal of study plans
 - ✓ Ongoing consultation as studies progress, including sites visits, etc.
- Task 2 – Synthesis of Existing Information. EESC will begin to synthesize existing information. A large amount of data has been collected in the Chehalis River Basin by the federal and state agencies as well as the Tribe and private landowners. EESC will consult with appropriate organizations and individuals to identify existing data sources and to synthesize existing information into an initial scoping document. Although by no means inclusive, information that EESC proposes to collect includes:
 - ✓ Anadromous and resident fish species presence including mainstem and tributary utilization and distribution; timing; life history; catch data, and other relevant information.

- ✓ Habitat assessments. This would include:
 - ✎ Instream flow and habitat assessments conducted by Washington Departments of Fish and Wildlife and Ecology, tribes, timber companies and NGOs.
 - ✎ Identification of limiting factors both in the mainstem and tributaries
- ✓ Wildlife and Potential Endangered Species Act-listed species assessments, including marbled murrelet, spotted owl, and others (including amphibians)
- ✓ Hydrological investigations and synthesis of U.S. Geological Survey gages (existing and previous) as well as any other gauging conducted in relevant areas of the Chehalis River System.
- ✓ Water quality data, including temperature.
- ✓ Geomorphology and sediment routing

After synthesis is completed, EESC will identify data gaps and discuss critical issues with appropriate agencies.

- Task 3 – Project Scoping. EESC will produce a scoping report that summarizes existing information and addresses data needs and critical issues. The scoping report will include field investigations required as well as additional information gathered from other sources. EESC will consult with the appropriate agencies as study scoping progresses.
- Task 4 – Produce Draft Study Plans. Once project scoping has been completed, draft study plans will be produced and presented to the stakeholders. EESC anticipates that several meetings will be required to address and resolve issues.
- Task 5 – Produce Final Study Plans for Agency Approval. After consultation with appropriate agencies, EESC will produce final study plans that will include investigations scheduled for 2010.

Proposed Budget and Schedule

A schedule of proposed tasks for the Environmental and Hydrologic Investigations is presented below in Table 2.

| Table 2 Proposed Schedule for Fisheries and Environmental Studies, Chehalis River Flood Retention | | | | | | | | |
|--|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|
| 2009 | | | | | | | | |
| Task | Description | Apr | May | Jun | Jul | Aug | Sep | Oct |
| 1 | Meetings and Coordination | | | | | | | |
| | Kickoff Meeting | | | | | | | |
| | Follow-Up Meetings During Scoping | | | | | | | |
| | Study Plan Approval | | | | | | | |
| 2 | Synthesize Existing Information | | | | | | | |
| 3 | Project Scoping | | | | | | | |
| 4 | Produce Draft Study Plans | | | | | | | |

| | | | | | | | |
|---|--|--|--|--|--|--|--|
| 5 | Produce Final Study Plans for Agency Approval Schedule Studies for 2010 | | | | | | |
|---|--|--|--|--|--|--|--|

EESC proposes an initial budget of \$55,000 for environmental scoping. Until consultation with the Tribe, state and federal agencies and NGOs commences and synthesis of existing information and project scoping is underway, it is not possible for EESC to give a firm cost estimate. Table 3 presents a preliminary estimate.

| Table 3 Estimated Costs for Environmental Investigations, Chehalis River Flood Retention | | |
|---|---|----------|
| Task # | Description | Costs |
| 1 | Meetings/Agency Consultation and Coordination | \$12,000 |
| 2 | Synthesize Existing Information | \$8,000 |
| 3 | Project Scoping | \$25,000 |
| 4 | Produce Draft Study Plans | \$7,000 |
| 5 | Submit Final Study Plans for Agency approval | \$5,000 |
| | Revised Study Plans and Schedule 2010 Study Plans | |
| | | |
| | Total Cost | \$55,000 |

Overall Project Management

Introduction

In order for the work in Phase II to provide the information needed, EESC will provide overall project management and coordination services.

Task Descriptions

- Task 1—Project management, coordination, meetings and conference calls. This task includes overall project management, meetings, conference calls and any coordination that will have to be done between all the parties involved.

Proposed Budget and Schedule

The budget for this segment of the Phase II benefit cost study is summarized in Table 4.

| Table 4 Cost Estimates for Economic Section of Updated Benefit Cost Study | | |
|--|--|-----------------|
| Task | Description | Estimated Costs |
| 1 | Project Management, Meetings, Coordination | \$35,000 |
| | TOTAL | \$35,000 |

C. SUMMARY OF BUDGET AND SCHEDULE

To summarize, Table 5 below recaps the budget for Phase II.

| Table 5 Budget Recap for Phase II Benefit to Cost Study | |
|--|------------------|
| Task | Estimated Budget |
| Preliminary Geotechnical | \$160,000 |
| Fisheries and Habitat Evaluation | 55,000 |
| Project Management, Meetings, Coordination | 35,000 |
| GRAND TOTAL | \$250,000 |

It is estimated that this portion of the Phase II feasibility study will cost \$250,000 and take 6 to 8 months to complete.